

=Miniaurizable, High Performance, Fiber-Optic Gyroscopes for Small Satellites, Phase II

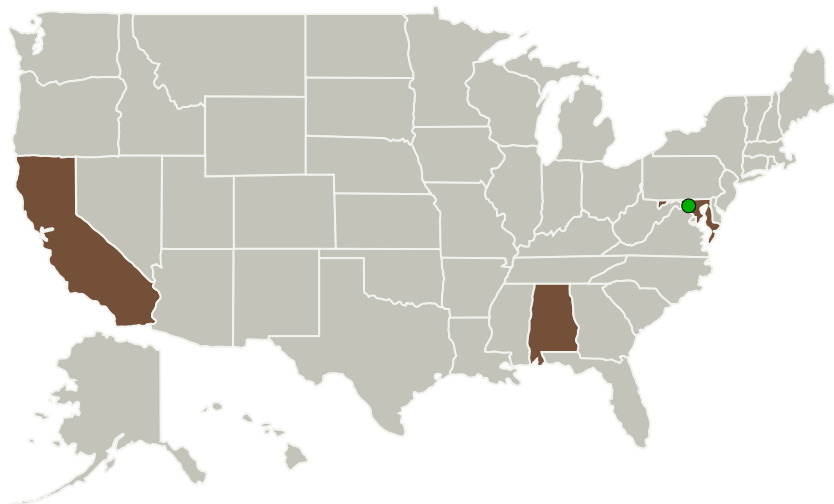
Completed Technology Project (2013 - 2016)



Project Introduction

This Phase 2 program builds on a successful Phase 1 effort that demonstrated practical engineering methods as well as continuing development paths to build smaller high performance gyro systems suitable for small satellite applications. This program will execute a logical follow-on endeavor by (a) using existing components that satisfy the specifications matrix, and (b) developing new components that are required to complete the task of fabricating small optical gyro heads. We have clearly defined tasks and realistic milestones with risk management embedded. Designed to fit within a 1U satellite chassis to adapt to the growing cube sat application space, a clear plan has been laid out to generate an IRU system that addresses deployment issues such as mass, harness routing, and 3-axis cluster versus split head configurations. The gyro design is a keen compromise between leveraging shorter wavelength subcomponents to improve performance naturally, smaller mechanical size to minimize thermal effects, and optoelectronics placement options for form factor flexibility. We recognize power management as the critical parameter for devices within small satellites, therefore an effort has been allocated to develop a solution concept for miniaturized and power-efficient control electronics to address the goal of <2W consumption, although its implementation is beyond the scope of this Phase 2 program.

Primary U.S. Work Locations and Key Partners



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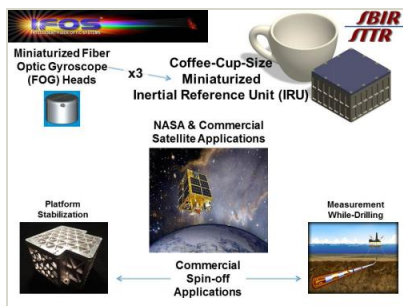


| Organizations Performing Work | Role | Type | Location |
|---|-------------------------|-------------|-------------------------|
| Intelligent Fiber Optic Systems Corporation | Lead Organization | Industry | Santa Clara, California |
| ● Goddard Space Flight Center(GSFC) | Supporting Organization | NASA Center | Greenbelt, Maryland |
| The University of Alabama | Supporting Organization | Academia | Tuscaloosa, Alabama |

Primary U.S. Work Locations

| | |
|----------|------------|
| Alabama | California |
| Maryland | |

Images



Briefing Chart

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(<https://techport.nasa.gov/image/136538>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Intelligent Fiber Optic Systems Corporation

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

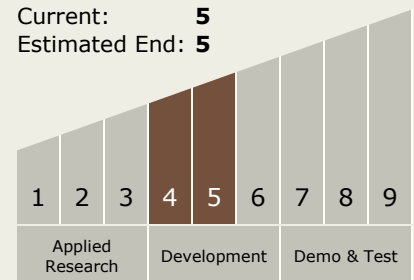
Richard J Black

Technology Maturity (TRL)

Start: 4

Current: 5

Estimated End: 5



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Technology Areas

Primary:

- TX17 Guidance, Navigation, and Control (GN&C)
 - └ TX17.2 Navigation Technologies
 - └ TX17.2.3 Navigation Sensors

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System